CITY OF FRISCO
CONSTRUCTION / GENERAL NOTES

1. It is not the intent of these construction notes to cover all details and/or specification requirements of the City of Frisco.

2. The existence and locations of all underground utilities shown (main lines, no lateral or services shown) on the drawings were obtained from available records and are approximate. Neither the owner nor the engineer assumes any responsibility for utilities not shown or not in the location shown. The Contractor shall determine the depth and location of existing underground utilities prior to trenching and shall be required to take any precautionary measures to protect all lines shown and / or any other underground utilities not of record or not shown on the plans. Contractor shall be responsible for contacting all franchise and city utilities prior to construction.

3. Any Contractor / Subcontractor performing work on this project shall familiarize himself with the site and shall be solely responsible for any damage to existing facilities resulting directly or indirectly from his operations. Said existing improvements shall include but not be limited to berms, ditches, fences, and plants. Any removal or damage to existing improvements shall be replaced or repaired by the Contractor at his expense and shall be approved by the city of Frisco.

4. All construction, testing, and materials shall meet or exceed all requirements of the City of Frisco. All submittals must be originals with signatures where applicable; facsimiles will not be accepted.

5. All testing shall be done by an approved laboratory at the expense of the Contractor. The City will only accept signed original copies of all testing reports for review.

6. The Developer or his/her designee shall be responsible for furnishing and installing all temporary and permanent traffic control in accordance with the minimum requirements of the latest revision of the Texas Manual on Uniform Traffic Control Handbook. All reference for using Texas Department of Transportation (TxDOT) standards and construction details shall be the latest revisions and/or amendments thereof. The City of Frisco uses raised pavement markings (buttons) for striping and thermoplastic markings in lieu of paint. The minimum sign size shall be the standard size in the manual. Details are available upon request for the type of button patterns and posts and connections required for the signs.

7. The Contractor shall make every effort not to impede traffic on existing streets, alleys, or firelanes open to the public. In the event the construction work requires the closure of an existing street, alley, or firelane, the Contractor shall request the road closure through the City. If the closure eliminates the second point of access to existing buildings with a certificate of occupancy, then the access may not be closed for more than forty-eight (48) hours and will require Fire Marshal approval in either case. Unless otherwise specified by the City, all other streets or alleys may not be closed for more than seventy-two (72) hours.

WATER SYSTEM
General Notes

All work and materials shall be in accordance with the City's standard specifications and general design standards.

1. All tapping sleeves and valves shall be full body ductile iron. With prior approval by the City Engineer, stainless steel Smith Blair 623 may be allowed for connection to existing lines twenty-inch (20") or larger.

2. Valves shall be Mueller, M&H or Waterous - 150 psi test.

3. Fittings shall be of the mechanical joint type, flanged where applicable, and be manufactured by US Pipe, American, or other as approved by the City – Class 250. All fittings shall be restrained by the use of Mega-Lugs or approved other and concrete thrust blocking.

4. Fire hydrants shall be M&H or Waterous three-way standard thread with valve in lead or approved other. All main steamer nozzles shall have a nominal inside diameter of four inches (4").

5. Water lines in the area of storm drain inlets shall be constructed behind the inlet by pulling the pipe using longitudinal bending in accordance with the manufacturer's requirements. Fittings may be used if bending is impractical; consult with the project City Construction Inspector.

6. Water lines crossing under storm drains and sanitary sewer lines shall have a minimum of eighteen inches (18") clearance below storm drains and twenty-four inches (24") clearance below sanitary sewer lines or otherwise as governed by Texas Commission on Environmental Quality (TCEQ) Chapter 290 requirements. Parallel water lines shall be at least nine feet (9') clear horizontally to sanitary sewer lines and manholes. Where minimum clearance cannot be achieved, water lines shall be encased six inches (6") around in concrete to ten feet (10') either side of the utility crossing. Where water lines cross creeks or ditches the water line shall be protected by concrete encasement at least ten feet (10') past the embankment slope on each side.

7. Water mains: All water mains shall have a minimum of forty-eight inches (48") cover over the top of the pipe. All new water mains shall be PVC pipe in accordance with the following: C900 DR 14 for four-inch (4") to eight-inch (8"), C900 DR 18 for twelve-inch (12"), and C905 DR 18 for over twelve-inch (12"), all "blue" in color as per City specifications; the pipe shall be laid on a minimum of class "F1" embedment (see Standard Construction Detail No. W10). Water mains up to twelve inches (12") shall be installed two feet (2') back of curb; mains larger than twelve inches (12") shall be installed at least three feet (3') from the back of curb depending upon conditions. Detectable Metallic Tape ("Blue-Caution Buried Water Below" or approved other) shall be installed after initial backfill on approximate centerline of pipe prior to final backfill.above all PVC mains.

7. The Contractor shall install fire hydrants at the locations shown. A M.J. and flanged tee with a flanged end to M.J. gate valve is required so that the gate valve is anchored to the main.

8. Fire hydrants shall be painted as follows:

   A. Tnemec Series 43-38H Diffused Aluminum, Silver for six-inch (6") mains.
   B. Tnemec Series 2H Hi-Build Tneme-Gloss, True Blue Safety for eight-inch (8") mains.
   C. Tnemec Series 2H Hi-Build Tneme-Gloss, Safety Yellow for twelve-inch (12") or larger water mains.

   All hydrants shall be painted with two coats of Tnemec Series 43-38H Diffused Aluminum, Silver Paint. When a color code other than aluminum is required, the top bonnet, including the lip and all nozzle caps, shall be painted the appropriate color.

9. All bolts and nuts used with mechanical joint fitting shall be "Cor-Ten" steel or approved other.

10. The installation of a blue stemsonite (or other) model 88-SSA fire hydrant marker will be installed opposite fire hydrants just off center to the side of the street adjacent to the hydrant.

11. Polyethylene encasement - the Contractor shall furnish and install polyethylene wrap around ductile iron pipe, related fittings, and valves. This wrap shall be an 8 mil. thickness polytube. Seams and overlaps shall be wrapped and held in place by two-inch (2") wide plastic backed adhesive tape, Polyken 900 or Scotchrap no. 50, or an approved other, with approximate two-foot (2') laps on the polytube. The wrap on the barrel of the pipe shall be loose enough to allow the film to shift with the soil. The wrap shall be installed without breaks, tears, or holes in the film. The cost of the polyethylene tube wrap and complete installation shall be included in the unit price bid for the furnishing and the installation of ductile iron pipe, related fittings, and valves.

12. Valve boxes shall be furnished at the required length in order to be set to final grade on each gate valve. After the final clean up and alignment has been completed, the Contractor shall pour a reinforced concrete block 24" x 24" x 6" around all valve boxes so the finished grade is level with the finished parkway. All valve stack components shall be cast iron. Valve boxes over four feet (4') deep will require extensions. All valves shall be marked with a saw on the curb or pavement with "V". The "V" shall point to the location of the valve as follows: If the valve is in the paving, the "V" shall be marked upright; if the valve is outside the paving, the "V" shall be marked upside down.

13. The Contractor shall coordinate operation of all existing valves with the City. Contact the project City Construction Inspector at the Construction Inspection Department at 972-335-5580.

14. All water lines shall be pressure tested to 200 psi for a three (3) hour continuous period. Leakage rate shall not exceed twenty-five (25) gallons per inch of nominal diameter per mile of pipe over a twenty-four (24) hour period. Contractor shall flush and sterilize lines and prove lines to be free of fecal coliform organisms by obtaining samples for laboratory tests for contamination. The Contractor shall reflush and resterilize until all samples prove free from

contamination.

15. All residential water services shall be as follows:

    A. Water services shall be normally located in the center of the lot. A water meter box, as approved by the City, with lock lid shall be installed two feet (2') back of curb line.
    B. Minimum one-inch (1") meter and one-inch (1") Type K copper services are required to serve all residential lots and patio homes. For townhomes and duplexes, a minimum three-quarter inch (3/4") meter and service shall be provided to each of the family units. Sand embedment shall be used around the pipe and corporation stop. Service saddles shall be brass body with double bronze flattened straps (no banded) – Ford, Cambridge, A.Y. McDonald, or approved other.
    C. The utility Contractor shall install the water services to a point two (2) feet back of the curb line at a depth of 12 inches. Line shall be continuous with no fittings under paving. The meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in back of the curb. Each service location will be marked on the curb with a single vertical saw mark by the utility Contractor and tied to property corners on the "As-Recorded" plans.
    D. If there is a curb, the curb shall be sawcut with "I" in good quality blue paint at the point where the service pipe passes the curb.

16. For non-residential water services, the meter box shall be furnished and installed by the Contractor after the paving Contractor has completed the final grading in back of the curb. Meter boxes/vaults shall be located outside of paving. Each service location will be marked on the curb or pavement with a single vertical saw mark by the utility Contractor and tied to property corners on the "As-Recorded" plans.

17. Density testing requirements: Frequency of trench compaction tests shall not be less than one (1) for any pipe section and every three hundred linear feet (300') linear feet of main pipe per two feet (2') of lift until final grade, starting at two feet (2') above the top of pipe. Water services are to be tested at a rate of one (1) for every six (6) services which cross the proposed right of way or every three hundred linear feet (300') of water service installed. Every other fire hydrant lead that cross the existing or proposed street, alley, or firelane subgrade shall also receive at least one set of density tests. All ditches shall be mechanically tamped and compacted to ninety-five percent (95%) Standard Proctor Density at zero percent (0%) to four percent (4%) above optimum moisture. Water jetting is not permitted.

18. The Contractor shall be responsible for providing "As-Recorded" plans to the engineer of record showing the location of water services and valves by distances to lot lines. This information shall be placed and marked "As-Recorded" by the engineer of record. Copies of these "As-Recorded" plans shall be furnished to the City as required.

19. The Contractor shall furnish a maintenance bond in the amount of 10 % (ten percent) of the total contract price to the City to run two (2) years from the date of acceptance of the system by the City.

SANITARY SEWER SYSTEM

General Notes

1. All sanitary sewer pipes four inches (4") to fifteen inches (15") nominal size shall be PVC SDR 35 or 26 meeting ASTM D3034. All sanitary sewer pipes eighteen inches (18") and larger nominal size shall be PVC meeting ASTM F679. All pipes shall be "green" in color as per City Specifications and be laid on a minimum of Class "F2" embedment (See Standard Construction Detail No. S11). Detectable Metallic Tape ("Green-Caution Buried Sewer Below" or approved other) shall be installed after initial backfill on approximate centerline of pipe prior to final backfill.

2. All sewer mains shall be a minimum diameter of eight inches (8") and shall maintain a minimum flow velocity of two (2) feet per second.

3. All residential sanitary sewer services shall be a minimum four inches (4") in diameter and extended to a point ten feet (10') inside the property line at a maximum depth of five feet (5'). The service shall then be extended at a forty-five degree (45 º) angle to four feet (4') above the finished grade and capped. Sewer services shall be located ten feet (10') downstream from the water service, which is normally in the center of the lot.

4. For non-residential sewer services, each service location will be marked on the curb or pavement with a double vertical saw mark by the utility Contractor and tied to at least one (1) property corner on the "As-Recorded" plans.

5. Density testing requirements: Frequency of trench compaction tests shall not be less than one (1) for any pipe section and every three hundred linear feet (300') of main pipe per two feet (2') of lift until final grade, starting at two feet (2') above top of pipe. Sewer services are to be tested at a rate of one (1) for every six (6) services staggered or every three hundred linear feet (300') of sewer service installed. Each sewer manhole will receive a density test every two feet (2') of lift until final grade, alternating around all quadrants. Every other main and stubout that crosses the existing or proposed street, alley, or firelane subgrade shall also receive at least one set of density tests. All ditches shall be mechanically tamped and compacted to ninety-five percent (95%) Standard Proctor Density at zero percent (0%) to four percent (4%) above optimum moisture. Water jetting is not permitted.

6. After paving is completed each service location will be marked on the curb with a two (2) parallel vertical saw marks by the utility Contractor and tied to at least one (1) property corner on the "As-Recorded" plans. All manholes and cleanouts shall be marked on the curb or pavement with "MH" or "CO" as applicable.

7. The Contractor shall be responsible for providing "As-Recorded" plans to the engineer of record showing the location of sewer services by distance to the lot lines or property lines. This information shall be placed on the Engineering plans and marked "As-Recorded" plans by the engineer of record. Copies of these "As-Recorded" plans shall be furnished to the City as required. Ties shall be made by distance measurements for all manholes, cleanouts and services.

8. TV inspections, low pressure air testing, vacuum testing of the manholes, and deflection testing are required on all sewer lines. Prior to paving, all residential sanitary sewer services shall have TV inspections.

9. Manholes shall have a 400# traffic bearing frame and cover and shall have a minimum compressive strength of 4000 psi at twenty-eight (28) days.

10. All concrete structures, whether precast or cast-in-place, shall be designed with an appropriate sulfate resistant cement or equivalent based on local soil conditions. Precast manholes or other special structures in any right-of-way or fire lane easement will require a certification from the manufacturer that the product meets the design criteria and twenty-eight (28) day compressive strength. Cast-in-place manholes or other special structures in any right-of-way and fire lane or utility easements will require cylinders to be made for strength tests by an approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100-150 cu yd of concrete, nor less than once for each 5000 sq ft of surface area for slabs or walls. Four (4) cylinders shall be made: one (1) shall be broken at seven (7) days, two (2) shall be broken at twenty-eight (28) days, and one (1) shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days, is required for each strength test; any strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to deficient in strength. For any areas deficient in strength by more than 500 psi but not more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to deficient in strength. For any areas deficient in strength by more than 1000 psi, the structure shall be removed and reconstructed at the full expense of the Contractor. Prior to City acceptance of any penalty payments for any traffic bearing structure that does not meet twenty-eight (28) day design strength, the Design Engineer shall provide a sealed structural evaluation that assesses the performance adequacy of the deficient structure as constructed under the design service loads. All coring and additional laboratory testing shall be at the expense of the Contractor.

11. The Contractor shall furnish a maintenance bond in the amount of 10 % (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

STORM SEWER SYSTEM

General Notes

1. All storm sewer pipe, box culverts, and other structures in right of way or fire lanes shall be reinforced concrete as per City Specifications and shall be laid on a minimum of a compacted crushed stone or pea gravel cushion, six inches thick below the bottom of the pipe shell unless otherwise approved by the City. The initial backfill of select material or fine granular shall be required to a minimum of the spring line of the pipe unless otherwise approved by the City.

2. Density testing requirements: Frequency of trench compaction tests shall not be less then one every 300 linear feet of pipe per 2.0' of lift until final grade, starting at 2.0' above top of pipe. Every other lateral; stubout that crosses the existing or proposed street, alley, or firelane subgrade; inlet; and junction box will receive a density test every lift. All ditches shall be mechanically tamped and compacted to 95% of standard proctor density at 0 – 4% above optimum moisture. Water jetting is not permitted.

3. The joints shall be constructed and jointed together in such a manner that no spill through of backfill will occur. This includes the lift holes used in certain pipe or box sizes. Approved joint materials are concrete mortar; cold applied, plastic asphalt joint compound; rubber gaskets; and cold applied, preformed plastic gaskets.

4. Storm drainage inlets shall be as indicated on the approved construction plans. For secondary and major street intersections, a recessed type inlet will be required. For industrial and residential streets, a curb line inlet will be required unless otherwise approved. A round manhole cover with locking device shall be placed on all inlet tops. The top shall be placed near the outlet pipe. All inlets shall have a minimum compressive strength of 4000 psi at 28 days. All concrete structures, whether precast or cast-in-place, shall be designed with an appropriate sulfate resistant cement or equivalent based on local soil conditions.

5. All concrete structures, whether precast or cast-in-place, shall be designed with an appropriate sulfate resistant cement or equivalent based on local soil conditions. All precast box culverts or other special structures in any right-of-way or fire lane easement will require a certification from the manufacturer that the product meets the design criteria and twenty-eight (28) day compressive strength. All cast-in-place box culverts or other special structures in any right-of-way and fire lane or utility easements will require cylinders to be made for strength tests by the approved laboratory. As applicable, all certifications for precast and/or batch designs for shall specify an appropriate sulfate resistant cement or equivalent Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100-150 cu yd of concrete, nor less than once for each 5000 sq ft of surface area for slabs or walls. Four (4) cylinders shall be made: one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days, is required for each strength test; any strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to deficient in strength. For any areas deficient in strength by more than 500 psi but not more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to deficient in strength. For any areas deficient in strength by more than 1000 psi, the structure shall be removed and reconstructed at the full expense of the Contractor. Prior to City acceptance of any penalty payments for any traffic bearing structure that does not meet 28 day design strength, the Design Engineer shall provide a sealed structural evaluation that assesses the performance adequacy of the deficient structure as constructed under the design service loads. All coring and additional laboratory testing shall be at the expense of the Contractor.

6. The Contractor shall furnish a maintenance bond in the amount of 10 % (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

PAVING SYSTEM

General Notes

1. Absolutely no earthwork, lime application, or other preparation of the subgrade for paving of streets, alleys, or fire lanes shall be initiated without authorization from the City Construction Engineer. Once all testing of underground facilities has been completed and verified to meet the City's specifications, the City Construction Engineer will issue a letter to the project owner or superintendent that will authorize the initiation of all subgrade work in preparation for paving. All street, alley, and fire lane right-of-way or easement width shall be excavated full width in accordance with the street and sidewalk section to be constructed. The subgrade for all streets, alleys, and fire lanes shall be stabilized with hydrated lime material to a distance 12 inches beyond the back of curb or edge of paving as applicable. The amount of lime material shall be that amount which will reduce the plasticity index (PI) below fifteen (15) as verified by testing by an approved laboratory; the City will add one (1) percent to the laboratory results for field variation. Laboratory testing (lime series) shall generally be conducted when all utilities are complete and the roadway subgrade is complete. Lime shall be applied by percentage dry unit weight of soil treated to a minimum in place compacted thickness of six (6) inches. Sulfate tests shall also be conducted in areas identified or suspected of being of the eagle ford shale or other formation under the direction of the approved laboratory. All testing for the presence of sulfates in the pavement subgrade shall be at the Contractor's expense. If the sulfates are present at an unacceptable concentration, the City may require a recommendation for further treatment of the soil from the approved laboratory, which shall be confirmed by the design engineer of record for the project.

2. Subgrade testing requirements: All fill and shall be compacted to no less than 95% of standard proctor density at 0 – 4% above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of fill. Frequency of testing shall not exceed every 300 linear feet per 2.0' of lift until final grade, starting at 2.0' above natural/sound grade to top of subgrade. All street, alley, and fire lane subgrade shall be compacted to no less than 95% of standard proctor density at 0 – 4% above optimum moisture content. Frequency of tests shall not exceed every 300 linear feet of subgrade, alternating from left quarter point to center line to right quarter point. Verification of lime depth, testing for subgrade gradations/pulverizations, and plasticity indices of the soil shall also be conducted; the frequency of this testing shall be as previously mentioned. All testing of materials required for the construction of any street, alley or fire lane shall be performed by an approved agency for testing materials. The nomination of the testing laboratory and the payment of such testing services shall be made by the Contractor. The engineer shall approve the laboratory nominated to do the testing of materials. It shall be the Contractor's responsibility to show by standard testing procedures that the work constructed does meet the requirements of the City's specifications.

3. Minimum design requirements: All street, alley, and fire lane paving shall be designed to have a minimum compressive strength of 3500 psi at twenty-eight (28) days with a minimum of five and one half (5 & 1/2) sacks of cement as verified by testing in an approved laboratory. Two batch designs shall be submitted to the City Construction Engineer for approval: one for machine work and one for hand work. All batch designs must be signed by the testing laboratory and include all documentation, such as results of field trial testing. A fly ash batch design may be submitted for approval on a specific job basis; fly ash up to twenty (20%) by weight of cement replacement may be used in machine pours. If applicable, all batch designs shall specify an appropriate sulfate resistant cement or equivalent. Slump shall be 1 – 3 inches for all machine work and 2 – 4 inches for all hand work. Streets (depending on classification) and fire lanes shall have a minimum thickness of six (6) inches; alleys shall have a minimum thickness of 8"-5"-8". Upon completion of construction, all streets and fire lanes shall be cored for depth (2" cores) at a spacing of 300 ft maximum, alternating from left quarter point to center line to right quarter point. Alleys shall be cored for depth (2" cores) at a spacing of 300 ft maximum along the center line. Pavement of a thickness less than the thickness shown on the plans by more than one-quarter (1/4) inch but less than three-quarter (3/4) inch will be considered deficient. The Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to deficient in thickness as defined above. Pavement deficient in strength by more than three-quarter (3/4) inch shall be removed and replaced completely. The deficient area shall be cored immediately on ten (10) foot centers or one (1) per panel to be proved out. All streets, alleys, and fire lanes will require cylinders to be made for strength tests by the approved laboratory. Samples for strength tests of each class of concrete placed each day shall be taken by an approved laboratory not less than once a day, nor less than once for each 100-150 cu yd of concrete. Four (4) cylinders shall be made: one shall be broken at 7 day, two (2) shall be broken at twenty-eight (28) days, and one shall be held in case of damage of any of the other three (3). The average strength of two (2) cylinders from the same sample, tested at twenty-eight (28) days is required for each strength test; any strength test beyond twenty-eight (28) days is unacceptable. If the twenty-eight (28) day design strength is not reached upon strength testing the cylinders, the deficient area shall be cored immediately be cored immediately on ten (10) foot centers or one per panel to be proved out. For any areas deficient in strength by not more than 500 psi, the Contractor shall pay to the City one (1) time the unit bid price per square yard for the area determined to deficient in strength. For any areas deficient in strength by more than 500 psi but not more than 1000 psi, the Contractor shall pay to the City two (2) times the unit bid price per square yard for the area determined to deficient in strength. Pavement deficient in strength by more than 1000 psi shall be removed and replaced completely. No more than three (3) - four (4) inch cores shall be extracted per panel without prior City approval. A rebar detector shall be used to ensure that the cored areas are clear of any rebar. All coring and additional laboratory testing shall be at the expense of the Contractor. The width to be considered for any deficiencies shall be the full width of the pavement.

4. Any section of all existing public or private streets, alleys, or firelanes shall be replaced within 72 hours of removal.

5. The Contractor shall furnish a maintenance bond in the amount of 10 % (ten percent) of the total contract price to the City to run two (2) years from the date of final acceptance of the system by the City.

STREET NAME BLADE SPECIFICATION

General Notes

1. Location: Six-inch (6") flat blades shall be used at all intersections within the interior of the subdivision. Nine-inch (9") extruded blades shall be used at intersections where a subdivision roadway intersects a roadway designated as a major or minor thoroughfare (Type A or B) and at all other intersections along major and minor thoroughfares (Type A or B).

2. Blade Requirements: Six-inch (6") Flat Blade shall be aluminum and have a thickness of 0.08 inches. Nine-inch (9") Extruded Blade shall be aluminum.

3. Lettering Alignment:

   A. Street name is left justified.
   B. Block numbers are located in upper right corner.
   C. Abbreviated street designations are located in lower right corner.

4. Lettering for 6" Flat Blades: (Type C, D, E, and F Roadways)

   A. Letters are all Uppercase.
   B. Font is Federal Highway SERIES B or SERIES C (manufacturer will determine best to use based on length of blade and length of name).
   C. Letters and Numbers in street name are 4" tall.
   D. Letters in abbreviated street designation are 2" tall (i.e., LN, PKWY, DR, CT, etc).
   E. Block Numbers are 2" tall.

5. Lettering for 9" Extruded Blades: (Type A and B Roadways)

   A. Letters are all Uppercase.
   B. Font is Federal Highway SERIES B or SERIES C (manufacturer will determine best to use based on length of blade and length of name).
   C. Letters and Numbers in street name are 6" tall.
   D. Letters in abbreviated street designation are 3" tall (i.e., LN, PKWY, DR, CT, etc).
   E. Block Numbers are 3" tall.

6. Sign Sheeting and Colors:

   A. High Intensity Sheeting.
   B. Background shall be green.
   C. Legend shall be white.

7. No Outlet Streets:

   A. The letters "NO OUTLET" shall be black uppercase letters on a yellow background.
   B. The word "NO" shall be centered over the word "OUTLET".
   C. On 6" flat blades, the font is Federal Highway SERIES B with 1.5" letters.
   D. On 9" extruded blades, the font is Federal Highway SERIES B with 2.5" letters.
   E. An arrow pointing in the direction of the no outlet locations shall be below the words "NO OUTLET"
   F. For a street with only one cul-de-sac end (typical), one side of the blade shall have "NO OUTLET" on the right with the arrow pointing to the right while the opposing side of the blade shall have the "NO OUTLET" on the left with the arrow pointing to the left.
   G. In the case of a street with two cul-de-sac ends, each side of the blade shall have the words "NO OUTLET" on the right with an arrow pointing to the right and the words "NO OUTLET" on the left with an arrow pointing to the left.

8. Block Numbers: Developers/contractors ordering signs should contact Charles Kirk in Development Services at 972-335-5580 Ext. 185. Block numbers are required on all street name blades, even if no houses/buildings front onto the street.

FRANCHISE UTILITY INSTALLATION

General Notes

1. Density testing requirements: Frequency of trench compaction tests shall not be less than one (1) for each pipe/conduit section crossing either a proposed or future street, alley, or firelane and every three hundred linear feet (300') of longitudinal pipe or duct bank per two feet (2') of lift until final grade, starting at two feet (2') above top of pipe. Services crossing any proposed or future street, alley, or fire lane easement are to be tested at a rate of one (1) for every six (6) services staggered or every three hundred linear feet (300') of sewer service installed. Each franchise manhole or other junction structure will receive a density test every two feet (2') of lift until final grade, alternating around all quadrants. Every other main and stubout that crosses the existing or proposed street, alley, or firelane subgrade shall also receive at least one set of density tests. All ditches shall be mechanically tamped and compacted to ninety-five percent (95%) Standard Proctor Density at zero percent (0%) to four percent (4%) above optimum moisture. Water jetting is not permitted.

UTILITY CROSSINGS

General Notes

1. Tunneling and boring under City streets shall be accomplished by means of jacking, boring, or tunneling equipment which is subject to the City approval prior to start of construction.

2. The voids outside of the carrier pipe or casing pipe shall be backfilled by hydraulically placed material so that there are no open voids over the roof of the tunnel or bore. This shall be done without damage to the roadway structure.

3. All bore pits, trenches, and inspection holes shall be backfilled within 48 hours of the installation of utility lines. The method of compaction shall be such that a soil density equal to that existing prior to the start of construction will be required as verified by an approved testing laboratory. Any excess or surplus material resulting due to displacement of utility lines and conduits shall be disposed of in an acceptable manner to the City.

4. The street sections that are shown as typical sections shall apply to any alleys, driveways, roadways, etc. that will be within a City right-of-way or easement.

5. The Contractor shall be required to install all necessary warning and safety devices that would protect the safety and health of the public until the work has been finished and accepted by the City.

6. The use of a casing pipe will be based upon the specific project location and soil conditions. The approved plans will show casing pipe if it is to be used on the specific bore in question. In general, the minimum casing thickness is 0.25 inch and the material shall be steel. Where more than one section is required, the casing ends shall be welded together. Raci spacers, or City approved other, shall be used to support the carrier pipe. The use of wood skids is no longer permitted.